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Non-prosthetic glenoid arthroplasty for shoulder arthritis: A Patient's Guide

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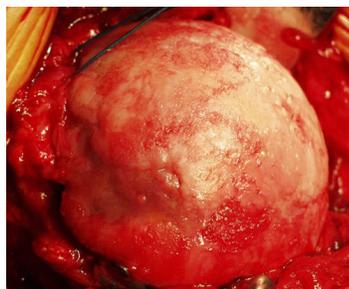


Figure 1 – Humeral head that has been damaged by arthritis.

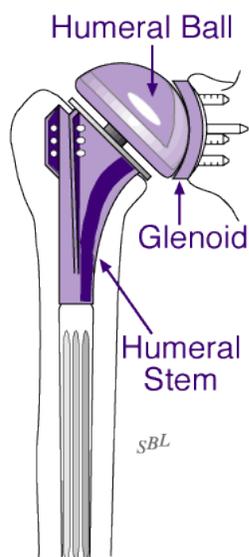


Figure 2 – Artificial components of a shoulder replacement.

Overview

Non-prosthetic glenoid arthroplasty, sometimes called the “ream and run” procedure, is a surgical treatment that can help relieve the pain from severe arthritis of the shoulder. Unlike conventional “metal on plastic” total shoulder replacement (total shoulder arthroplasty), the “ream and run” approach may allow active patients to remain involved in fitness, recreational, and vocational pursuits that would risk premature failure of the plastic component with traditional total shoulder arthroplasty.

The shoulder is a ball and socket joint that allows the arm to be placed in an incredibly wide range of positions during everyday activities. The ball is formed by the head of the humerus (arm bone), and the socket is formed by the scapula (shoulder blade). The socket is also referred to as the glenoid. The surfaces of the ball and socket are formed by cartilage, a tissue that allows joints to glide in a smooth and frictionless way.

In patients with shoulder arthritis, the cartilage on the humeral head and glenoid deteriorates. As this process becomes more advanced, the joint surfaces become rough, and areas of bone may be exposed. Figure 1 shows the surface of a humeral head destroyed by arthritis. Motion of the arthritic joint causes the surfaces to grate rather than glide. Progressive joint destruction makes the shoulder stiff, painful and unable to carry out its normal functions.

When pain and loss of function become disabling enough for a patient to consider treatment, joint replacement surgery is the most reliable solution for shoulder arthritis. The goals of shoulder replacement are restoring comfort and function to the joint by removing scar tissue, balancing muscles, and replacing the destroyed joint surfaces with artificial ones.

The artificial components of a typical shoulder replacement include the humeral ball (which is made of metal) and the glenoid component (which is made of plastic). These components are depicted in figure 2. The humeral

ball is fixed to the humerus (arm bone) by attachment to a stem that rests securely inside the hollow canal of the bone. The glenoid component is fixed to the shoulder blade using a small amount of bone cement.

While total shoulder replacement surgery has proven to be a successful treatment for advanced shoulder arthritis, the artificial components are not designed to withstand some of the demands that active individuals expect to place on them once comfort and function have been restored. As more and more people continue participation in sports and other recreational activities into their older years, they may slowly begin to exceed the limits of what the artificial components are designed to tolerate.

This is particularly true for the plastic socket that is prone to wear out, loosen or even break in very active individuals. Patients who intend to return to activities that place physical demands on the shoulder replacement (such as golf, tennis, skiing, weightlifting etc.) may therefore be at risk for eventual failure of the artificial shoulder socket. When failure of the socket occurs, patients typically experience a dramatic decrease in their comfort and function.

Therefore, a conventional total shoulder replacement, which resurfaces the arthritic socket with a plastic component, may not be the best option in terms of preserving comfort and function in very active patients. In these patients, an alternative that removes the destroyed cartilage and provides a smooth and stable surface without insertion of the plastic socket may be more sensible.

This alternative is referred to as shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty. In this procedure, the humeral head is replaced with a metal ball in the exact same manner as a regular shoulder replacement. The socket is not replaced but is refinished in way that gives it a smooth surface and a shape matching that of the humeral ball. This process can also re-orient the direction of the socket when it is pointing too far toward the back as a result of bone erosion.

Because the socket side of the joint is reshaped and the ball side replaced, the rough arthritic surfaces are eliminated from both sides of the shoulder joint. By avoiding the use of a plastic socket, non-prosthetic glenoid arthroplasty removes the risk of loosening or wear of the polyethylene component. Because problems with the metal ball are very rare, this procedure should improve the longevity of comfort and function in patients who might otherwise experience earlier problems related to socket loosening or wear.

This procedure has proven successful in restoring comfort and a high level of shoulder function in patients with severe shoulder arthritis. The recovery of comfort may take longer than with conventional total shoulder arthroplasty, however. Like a conventional shoulder replacement operation, it is a highly technical procedure and is best undertaken by a team that performs this surgery often. Such a team can maximize the benefit and minimize the risks. The two-hour procedure is performed under general (or nerve block) anesthesia.

Shoulder motion is started immediately after the procedure. Patients learn to do their own physical therapy and are usually discharged three days after surgery if they are comfortable and have a good range of passive motion. The recovery of strength and function may continue for up to a year after surgery.

Review of Arthritis of the Shoulder

Characteristics of arthritis of the shoulder

Individuals with shoulder arthritis usually notice pain, stiffness and loss of the ability to use the shoulder for their usual activities. Commonly, they have difficulty sleeping on the affected shoulder and limited range of motion. Some people with arthritis notice a grinding feeling when the shoulder is moved. Shoulder arthritis usually gets worse over time, but the rate of this progression varies widely.

Types

Shoulder arthritis may be of several types, including osteoarthritis (degenerative joint disease), rheumatoid arthritis, arthritis after injury (traumatic arthritis), arthritis after previous surgery (for example, capsulorrhaphy arthropathy), and arthritis associated with rotator cuff disease (known as cuff-tear arthropathy). Arthritis may also follow infection; this is known as septic arthritis. If the ball of the shoulder joint (humeral head) dies from lack of circulation, a condition known as avascular necrosis (or osteonecrosis) of the shoulder may result.

Similar conditions

Shoulder arthritis must be distinguished from rotator cuff disease, frozen shoulder, and neck arthritis, each of which may produce similar symptoms. Rotator cuff tears usually cause pain and weakness, but stiffness is less common. Frozen shoulder is characterized by shoulder stiffness, but the X-rays are usually normal. Neck arthritis may cause shoulder pain and weakness that is worse when the head is held in certain positions.

Incidence and risk factors

Although not as common as rotator cuff disease, shoulder arthritis is among the most prevalent causes of shoulder pain and loss of function. Arthritis of the shoulder joint is less common than arthritis of the hip or knee. Individuals with arthritis in one joint are more likely to get it in another joint.

Diagnosis

A physician diagnoses shoulder arthritis by reviewing the patient's history, performing a thorough physical examination of the joint (this will reveal stiffness and roughness) and taking X-rays.

X-rays of the shoulder reveal the contour of the joint surfaces and the status of the cartilage space between them. X-rays of an arthritic shoulder usually show a narrowing of the space between the ball and socket—often to the point that bone is touching bone. The left side of figure 3 shows bone spurs at the bottom of the joint. The right side of figure 3 shows that the ball is not centered and has worn down the back part of the socket. These findings indicate that the normal cartilage has been destroyed. X-rays do not show the soft tissues, such as scar tissue, that may also be limiting joint motion.

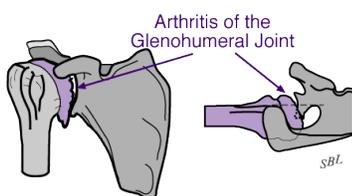


Figure 3 – Glenoid bone spurs: The figure on the left shows bone spurs at the bottom of the joint. The figure on the right shows that the ball is not centered and has worn down the back part of the socket.

It is essential that the shoulder surgeon establish the diagnosis of arthritis before shoulder joint replacement is considered.

Medications

Medications may be helpful in managing arthritis. In the case of rheumatoid arthritis, specific drugs may treat the inflammation that destroys the cartilage. Some of these medications are administered by injection while others are administered by mouth. Some individuals take anti-arthritic medications for their entire lives. These medications can be quite helpful, but there may be side effects. Arthritic medications should be taken under the close supervision of a rheumatologist or other physician experienced in their use. In other types of arthritis, anti-inflammatory drugs may lessen the pain, but do not change the course of the condition. It is important that the patient be aware of the possible side effects of these medications, including stomach irritation, kidney problems and bleeding. Injections of steroids (cortisone) or lubricants (such as hyaluronic acid) into the shoulder have not been demonstrated to have lasting benefit and carry some risk of infection.

For each medication, patients should learn:

1. the risks,
2. possible interactions with other drugs,
3. the recommended dosage, and
4. the cost.

Exercises

If exercises are not too painful, they may be helpful in maintaining the flexibility and strength of joints with arthritis. In most cases these exercises can be done in the patient's home with minimal equipment. Shoulder exercises are best performed gently several times a day on an ongoing basis. Often the exercises will help during the earlier phases of the condition. The exercises are not dangerous if they are performed gently. The diagrams show two examples of these exercises.

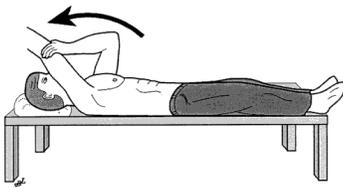


Figure 4



Figure 5

Figure 4 shows a patient using the left arm to help lift the stiff right shoulder in a forward direction. Figure 5 shows a patient using the left arm to gently stretch the stiff right arm in external rotation using a yardstick.

Sometimes other types of therapy are used by physical therapists. Patients should learn the possible risks of these approaches as well as their costs and anticipated effectiveness.

Considering Surgery

Possible benefits of non-prosthetic glenoid arthroplasty

With proper rehabilitation, shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty restores lost function to arthritic shoulder joints. Both total shoulder replacement surgery and non-prosthetic glenoid arthroplasty can improve the mechanics of the shoulder, but cannot make the joint as good as it was before the onset of arthritis. In many cases, the tendons and muscles

around the shoulder have been weakened from prolonged disuse before the operation. It can often take months of gentle exercises before the shoulder achieves maximum improvement.

The effectiveness of the procedure depends on the health and motivation of the patient, the condition of the shoulder, and the expertise of the surgeon. Strict adherence to the rehabilitation program maximizes the chances of a good result from non-prosthetic glenoid arthroplasty. Maintaining general health, fitness and nutrition as well as abstinence from cigarette smoking all improve the chances of success. The greatest improvements are in the ability of the patient to sleep, to perform activities of daily living, and to perform non-contact recreational activities.

Types of surgery recommended

When the normally smooth surfaces of the shoulder joint are severely damaged by arthritis or injury, shoulder replacement surgery is the most effective method for restoring comfort and function to the joint. There are other surgical options for treatment of arthritis of the shoulder, but none have proven as effective in terms of pain relief and patient satisfaction as shoulder replacement. Arthroscopy or “clean up” operations have not been shown to give lasting benefit. Shoulder fusion can stabilize the joint, but does not allow shoulder motion. Removing the joint allows some motion at the joint, but does not provide stability.

Joint replacement surgery is considered when:

1. the arthritis is a major problem for the patient,
2. the patient is sufficiently healthy to undergo the procedure,
3. the patient understands and accepts the risks and alternatives,
4. there is sufficient bone and tendon to permit the surgery, and
5. the surgeon is experienced in shoulder replacement surgery.

What happens without surgery?

The natural history of arthritis is that the disease usually continues to progress over time. The rate of progression varies between individuals and is unpredictable. Sometimes the pain and stiffness from shoulder arthritis will stabilize at a level that is acceptable and manageable to the patient. In general, this surgery is elective, and can be performed whenever the patient decides that the arthritis has become disabling enough to warrant treatment. Delaying surgery typically does not compromise the success of surgery in the future. However, in cases of rheumatoid arthritis, excessive delay may result in loss of the tendon and bone, making the surgery more difficult for the patient and for the surgeon.

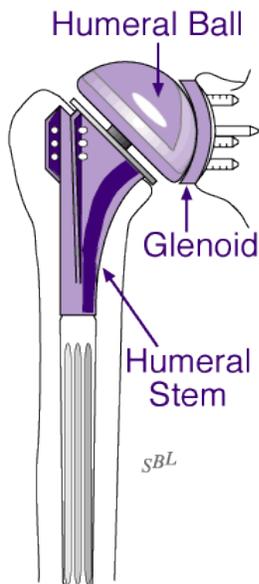


Figure 6 – Humeral implant

Surgical options

Several types of shoulder arthroplasty are used to manage arthritis. In total shoulder arthroplasty, the surfaces of both the humeral head (ball) and the glenoid (socket) are resurfaced with metal and plastic implants. Figure 6 shows the metal humeral ball and humeral stem as well as the plastic glenoid prosthesis. In shoulder hemiarthroplasty, a prosthesis is used only on the humeral side of the joint. Because the humeral component can usually be se-

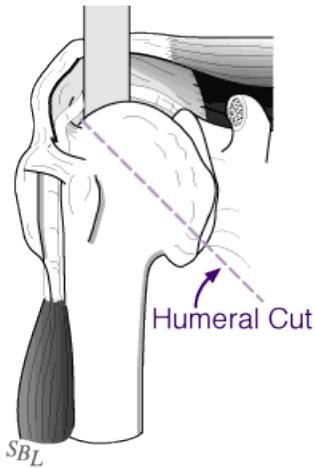


Figure 7 – Humeral Cut: the amount of the damaged ball that is removed.

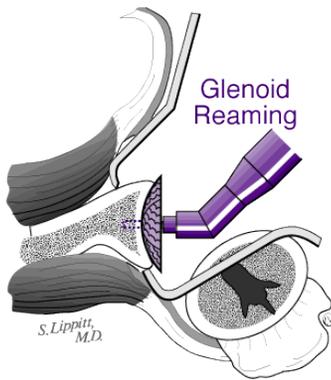


Figure 8 – Glenoid bone being reshaped with a spherical reamer.

cured by a press fit, most humeral replacement surgery does not require bone cement. As a result, the risk of cement failure is eliminated. Figure 7 shows the amount of the damaged ball that is removed (humeral cut). In shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty, the humeral surface is replaced and the glenoid socket is reshaped. Figure 8 shows the glenoid bone being reshaped with a spherical reamer.

The decision regarding which type of shoulder replacement will maximize benefit and minimize risk depends on several factors. These include the location and severity of the arthritis, the age of the patient and the level of physical demand the patient expects to exert on the replaced shoulder. When advanced arthritis has destroyed both the ball and socket, then both sides of the joint must be addressed.

As with joint replacement procedures in other parts of the body, the plastic socket prosthesis used in the total-replacement procedure does not last forever. It stands to reason that younger and more active patients are more likely to experience socket wear in the course of their life as the plastic is exposed to a longer period of use. In addition, patients who remain physically active often place higher demands on the shoulder. As more people continue to engage in sports and other demanding recreational activities into their 60's, 70's and 80's, shoulder replacements are being asked to tolerate more wear and tear – often the same level of use that may have predisposed the shoulder to develop arthritis in the first place.

Younger patients and those who intend to return to a high level of physical activity are at risk of developing socket failure after total shoulder arthroplasty. In certain cases, this can occur within the first several years after surgery. When failure occurs, additional surgery is usually required to remove the damaged socket. If the bone underneath the socket has also been damaged by the wear and loosening process, it may be impossible to replace the socket. In this case, the success of revision surgery is less predictable.

Effectiveness

Non-prosthetic glenoid arthroplasty addresses the risk of socket failure in younger and physically demanding patients. Because no plastic is inserted into the joint, there are no problems related to artificial socket wear, loosening and breaking. In the hands of experienced surgeons, this procedure has proven durable in terms of allowing patients to return to their expected level of activity. Some patients who have undergone this procedure have returned to weightlifting, water-skiing, golf and landscaping. As long as the shoulder is cared for properly and subsequent injuries are avoided, the benefit can last for decades.

Urgency

Shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty is an elective procedure that can be scheduled when circumstances are optimal for the patient. It is not an urgent procedure. The patient has plenty of time to become informed and to select an experienced surgeon.

Factors that the patient should consider in choosing the optimal time include the following:

1. The arthritis has become sufficiently disabling to impair the performance of daily activities. Patients who are still able to sleep comfortably and manage daily activities may consider waiting.
2. A planned period of time can be specifically dedicated to the recovery and rehabilitation process that will not interfere with other scheduled events.
3. Overall health and nutritional status are optimal and will not limit the ability to comply with the performance of rehabilitation.
4. Motivation and readiness to undertake the process of surgery, recovery and rehabilitation is a priority.

Risks

The risks of shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty include: infection, injury to nerves and blood vessels, fracture, stiffness or instability of the joint, failure of the rotator cuff, pain, and the need for additional surgeries. There are also risks to anesthesia and blood transfusion (although transfusions are not always necessary). Furthermore, it is possible that the joint will remain or become painful without plastic resurfacing of the glenoid. In such a case, it may be necessary to revise the hemiarthroplasty to a total shoulder arthroplasty.

An experienced shoulder joint replacement team will use special techniques to minimize these risks, but cannot totally eliminate them.

Managing risk

Many of the risks of this surgery can be effectively managed if they are promptly identified and treated. Infections may require a “wash out” in the operating room; occasionally removal of the artificial components is necessary. Blood vessel or nerve injury may require repair. Fracture may require surgical fixation. Stiffness or instability may require exercises or additional surgery. If the patient has questions or concerns about the course after surgery, the surgeon should be informed as soon as possible.

Preparing for surgery

Patients should optimize their health so that they will be in the best possible condition for this procedure. Smoking should be stopped a month before surgery and not resumed for at least three months afterwards. Any heart, lung, kidney, bladder, tooth, or gum problems should be managed before surgery. Any infection may be a reason to delay the operation. The shoulder surgeon needs to be aware of all health issues, including allergies and the non-prescription and prescription medications being taken. Some of these may need to be modified or stopped. For instance, aspirin and anti-inflammatory medication may affect the way the blood clots. Since blood transfusion may be necessary, patients may choose to have a blood bank draw and store their own blood.

Costs

The surgeon's office should provide a reasonable estimate of:

1. the surgeon's fee,
2. the hospital fee, and
3. the degree to which these should be covered by the patient's insurance.

Surgical team

Shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty is a technically demanding procedure that should be performed by an experienced surgeon in a medical center accustomed to performing shoulder joint replacements at least several times a month. Patients should inquire as to the number of shoulder replacement procedures that the surgeon performs each year and the number of these procedures performed in the medical center each year.

Finding an experienced surgeon

Because only a few thousand shoulder replacement procedures are performed in the United States each year, it is unlikely that every community has an experienced shoulder arthroplasty surgeon who performs many of these procedures each year. The number of surgeons performing non-prosthetic glenoid arthroplasty as described here is small.

Surgeons specializing in shoulder joint replacement may be located through university schools of medicine, county medical societies, or state orthopaedic societies. Other resources include local rheumatologists or professional societies such as the American Shoulder and Elbow Surgeon Society.

About the procedure

Technical details

Shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty is a highly technical procedure; each step plays a critical role in the outcome.

After the anesthetic has been administered and the shoulder is prepared, an incision is made across the front of the shoulder from the middle of the collarbone to the middle of the arm bone as shown in Figure 9. This incision allows access to the joint without damaging the important deltoid or pectoralis muscles that are responsible for a significant portion of the shoulder's power.

The muscles and other tissues near the shoulder are mobilized by removing any scar tissue that may restrict their motion. The tendon of the subscapularis muscle is cut to gain access to the joint and released circumferentially (a 360-degree release) to restore its length and mobility. Figure 10 shows where the arthritic humeral head (ball of the joint) is removed. The bone spurs are removed to prepare the bone for the humeral prosthesis.

The humeral implant is chosen by trying different sizes and selecting the one that best matches the patient's anatomy and best restores the muscle balance

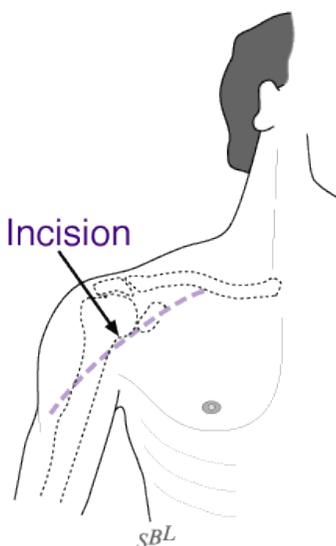


Figure 9 – Axillary incision

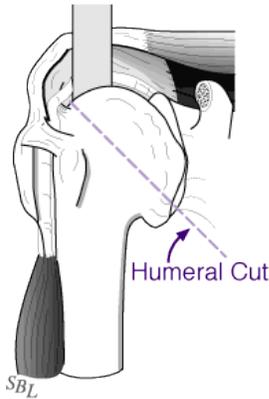


Figure 10 – Humeral cut



Figure 11 – Arthritic glenoid

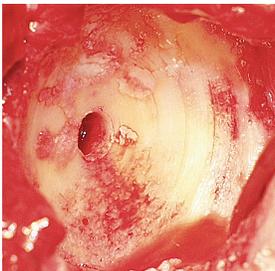


Figure 12 – Arthritic glenoid after it has been reamed

in the joint without making things too tight or too loose. The arthritic glenoid is then refinished using a special spherical reamer. This reaming process corrects the shape and orientation of the socket, both of which are affected by shoulder arthritis. The curvature of the reamer nearly matches that of the humeral ball and this matching surface allows smooth and stable rotation of the ball in the socket. Figure 11 shows the arthritic glenoid and figure 12 shows the glenoid after it has been reamed.

In this procedure, the glenoid shape and orientation are corrected, but a glenoid prosthesis is not inserted. Once the reaming process is completed, the final humeral component is inserted. The subscapularis tendon is then carefully repaired and closure of the muscle and skin layers completes the procedure. A drain is placed which is removed on the second morning after surgery. This prevents blood from collecting in the wound.

Anesthetic

Shoulder replacement surgery may be performed under a general anesthetic or under a brachial plexus nerve block. A brachial plexus block can provide anesthesia for several hours after the surgery. The patient may wish to discuss their preferences with the anesthesiologist before surgery.

Length of surgery and stay

The procedure usually takes approximately two hours, however the preoperative preparation and the postoperative recovery may add several hours to this time. Patients often spend two hours in the recovery room and two to four days in the hospital after surgery.

Recovering from surgery

Pain and pain management

After the non-prosthetic glenoid arthroplasty, the reamed glenoid surface must heal. This process may require up to a year to complete. Shoulder replacement of this type is a major surgery that involves cutting of skin, tendons and bone. Immediately after surgery, strong medications (such as morphine or Demerol) are often given by injection. Within a day or so, oral pain medications (such as hydrocodone or Tylenol with codeine) are usually sufficient. These are taken for about two weeks.

Because a plastic socket is not inserted when a non-prosthetic glenoid arthroplasty is performed, there may be some initial added discomfort from the metal ball articulating with the bone. When the glenoid is reamed, small fractures in the surface bone are intentionally created. These tiny surface fractures initiate a healing response that improves the smoothness of the socket and may help distribute force from the arm to the body. This healing process may make the first six weeks more uncomfortable than a total shoulder replacement surgery. This discomfort should be only temporary and, as the healing process completes, comfort levels are expected to approach that of total shoulder arthroplasty.

Important side effects

Pain medications can cause drowsiness, slowness of breathing, difficulties in emptying the bladder and bowel, nausea, vomiting and allergic reactions. Patients who have taken substantial narcotic medications in the recent past may find that usual doses of pain medication are less effective. For some patients, balancing the benefit and the side effects of pain medication is challenging. Patients should notify their surgeon if they have had previous difficulties with pain medication or pain control.

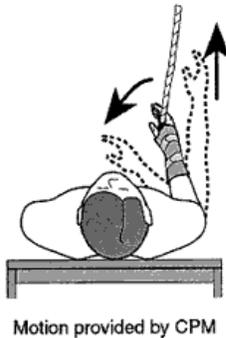
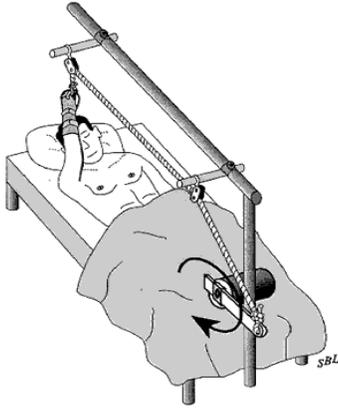


Figure 13 – Continuous passive motion machine

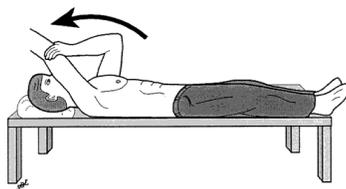


Figure 14



Figure 15

Hospital stay

After surgery the patient spends an hour or so in the recovery room and is then transferred to a private room. A drainage tube is usually used to remove excess fluid from the surgical area. The drain is usually removed on the second day after surgery. Bandages cover the incision. They are usually changed the second day after surgery.

Patients are discharged as soon as the incision is dry, the shoulder is comfortable with oral pain medications, the patient can perform the range of motion exercises, and the home support systems for the patient are in place. Discharge is usually on the third or fourth day after surgery.

Recovery and rehabilitation in the hospital

Early motion after shoulder hemiarthroplasty with non-prosthetic glenoid arthroplasty helps achieve the best possible shoulder function. Arthritic shoulders are stiff. Early motion is facilitated by the complete surgical release of the tight tissues so that after surgery the patient has only to maintain the range of motion achieved at the operation. However, after surgery, scar tissue will tend to recur and limit movement unless motion is started immediately. Early motion also facilitates healing of the glenoid bone and ensures that a smooth bony surface will form to articulate with the metal ball.

A continuous passive motion (CPM) machine is often used to gently move the shoulder in the recovery room immediately after surgery. The CPM machine, shown in figure 13, is used for the first few days after surgery whenever the patient is in bed.

During the hospitalization, the patient learns a simple rehabilitation program that will be used for maintaining the range of motion at home after discharge. Figures 14 and 15 show the exercises used to maintain elevation and rotation of the arm. On the day of surgery or on the day after, the physical therapist teaches the patient gentle range of motion exercises. The patient is usually shown how to stretch the shoulder forward and out to the side, preventing stiffness and adhesions.

Walking and use of the arm for gentle activities are encouraged soon after surgery.

Hospital discharge

At the time of discharge, the patient should be relatively comfortable on oral medications, should have a dry incision, should understand their exercises

and should feel comfortable with the plans for managing the shoulder. For the first month or so after this procedure, the operated arm may be less useful than it was immediately beforehand.

The specific limitations can be specified only by the surgeon who performed the procedure. It is important that the repaired tendons not be challenged until they have had a chance to heal. Usually the patient is asked to lift nothing heavier than a cup of coffee for six weeks after the surgery.

Management of these limitations requires advance planning to accomplish the activities of daily living during the period of recovery.

Convalescence and rehabilitation

Patients usually require some assistance with self-care, activities of daily living, shopping and driving for approximately six weeks after surgery. Patients usually go home after this surgery, especially if there are people at home who can provide the necessary assistance, or if such assistance can be arranged through an agency. In the absence of home support, a convalescent facility may provide a safe environment for recovery.

When strengthening exercises are added to the program—often at around six weeks—outpatient physical therapy for rotator cuff strengthening may be beneficial. However, motivated patients may also perform these exercises at home with equal effectiveness. Occasional visits to the surgeon or therapist may be useful to check the progress and to review the program.

Recovery of comfort and function continues for many months after the surgery. Improvement in some activities may be evident as early as six weeks. With persistent effort, patients make progress for as long as a year after surgery.

Once the range of motion and strength goals are achieved, the exercise program can be cut back to a minimal level. However, gentle stretching is recommended on an ongoing basis. In addition, a maintenance program to keep the rotator cuff muscles strong and healthy will ensure proper function of the artificial joint and may help prolong its benefit.

Patients are almost always satisfied with the increases in range of motion, comfort and function that they achieve with the exercise program. If the exercises are uncomfortable, difficult, or painful, the patient should contact the therapist or surgeon promptly.

Returning to ordinary daily activities

In general, patients are able to perform gentle activities of daily living using the operated arm from two to six weeks after surgery. Walking is strongly encouraged. Driving should wait until the patient can perform the necessary functions comfortably and confidently. Recovery of driving ability may take six weeks if the surgery has been performed on the right shoulder, because of the increased demands on the right shoulder for shifting gears.

With the consent of their surgeon, patients can often return to activities such as swimming, golf and tennis at six months after their surgery.

Long-term patient limitations

One of the primary goals of this surgery is to allow physically demanding individuals to return to activities that would otherwise have been prohibited with the implantation of a plastic socket. While there are no strict limitations on participation, those activities that involve impact (chopping wood, contact sports) and those that involve heavy loads (weightlifting) may predispose the rotator cuff tendons to injury and tear. Thus patients should take caution in these types of activities to minimize the risk of damage to the operated shoulder.

Shoulder Surgery at the University of Washington Medical Center

If you are interested in making an appointment to discuss this procedure, you can request an appointment using our online referrals website. To request a referral online, www.orthop.washington.edu. You can also call 206-598-7416 to make an appointment.

To see this article online, including a Talk Medicine television program featuring this procedure, visit:
www.orthop.washington.edu/reamandrun

ABOUT DR. FREDERICK MATSEN

Dr. Matsen has dedicated his entire professional life to developing excellence in Orthopaedics and Sports Medicine at the University of Washington. Starting with his residency here in 1971, he developed an interest in shoulder and elbow reconstruction. A fellowship with the father of modern shoulder surgery, Dr. Charles S. Neer II, confirmed his lifetime commitment to improving the art of care of patients with simple and complex problems involving the shoulder and elbow. He has partnered with Charles Rockwood, a fellow Texan, in editing the definitive text in shoulder surgery, *The Shoulder*, now in its third edition from Saunders. He has also written *Practical Evaluation and Management of the Shoulder* and most recently, along with a former shoulder fellow Steve Lippitt, has published *Shoulder Surgery, Principles and Procedures*, also published by Saunders. Matsen and his partner Kevin Smith are the primary faculty for a fellowship in shoulder and elbow surgery.

Dr. Matsen is also the medical director for University of Washington Sports Medicine, a group that has the honor of caring for the varsity student athletes at the UW. He is also director of the Residency Program (coordinated by fellow professor Doug Hanel), which is recognized as one of the top orthopaedic residencies in the United States.

Finally, he is chair of the Department of Orthopaedics and Sports Medicine, a position he has held since 1986. During his tenure the department has become one of the top departments in the U.S., according to rankings by *U.S. News and World Report* and by the National Institutes of Health. These dramatic accomplishments are a direct result of the wonderful faculty, staff, residents, fellows, postdoctoral students, graduate students, alumni, and benefactors that have together made the department what it is today.

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